Utility Interconnection Equipment Certification

The information on this form is provided to indicate the compliance of the generation equipment listed below with the utility interconnection certification requirements defined in California PUC Electric Rule 21

Certifying Laboratory *The information on this form is provided by the following Nationally Recognized Test Laboratory*

Laboratory: Intertek ETL Semko _____

Contact Name: Frank Serra_____Phone: (905) 678-7820 E-mail: _____

Address: 3210 American Drive _____

City: Mississauga _____ State: ON_____Zip: L4V 1B3 _

Accredited by:_____ Date: _____

Accredited to (test standards)[1]: Safety for Inverters, Converters, and Controllers for Use in Independent Power Systems, UL 1741 (First Edition, Dated May 7, 1999 including revisions up to November 7th, 2005) _____

Equipment Specification *The information on this form applies to the following equipment*

Equipment Manufacturer: Fuel Cell Energy/Satcon Power Systems _____

Address: 3 Great Pasture Road _____

City: Danbury _____ State CN _____ Zip 06813 __

Model Number(s): Fuel Cell Energy Inc. Model # DFC300A-S using Satcon Power Systems inverter model AE-375-50-F-U-04_____

Software Version(s): PC-01100-S069-C _____

Effective[2]: _____

Device Description[3]: The products covered by this report are Power Conditioning Modules with forced air-cooling housed within listed Type 3R enclosure that receive power from (external) fuel cells and converts it into 3Ø a.c. power for utility-interactive applications and intended to be permanently installed in an unclassified, indoor/outdoor location.
The unit (Model No. AE–375–50–F–U–04) measures 244cm (96”) wide, 107cm (42”) deep, 227.5cm (89-1/2”) high and weighs approximately 5,425Kg (11,960 Lbs).

The product output is intended to have a point of common coupling with the grid on load side of the building service equipment (location category B) _____

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Test Results[4]

Mark the box next to each requirement that has been met and each test that has been performed and successfully passed. Provide an explanation of any exceptions or omissions on a separate sheet. List additional test documents used on a separate sheet

Result	Test	Standard Before 11/07/05	Standard After 11/07/05
☑	Utility Interaction	UL1741 Sect. 39	IEEE1547.1 Sect. 5.2, 5.3
N/A	DC Isolation	UL1741 Sect. 40.1	IEEE1547.1 Sect. 5.6
☑	Max. and min. input voltage	UL1741 Sect. 41.2	UL1741 Sect. 41.2
☑	Dielectric Voltage Withstand	UL1741 Sect. 44	UL1741 Sect. 44
☑	Output Ratings	UL1741 Sect. 45.2	UL1741 Sect. 45.2
☑	Harmonic (Stand-Alone)	UL1471 Sect. 45.4.1	UL1741 Sect. 45.4.1
☑	Harmonic (Grid Tie)	UL1741 Sect. 45.4.2	IEEE1547.1 Sect. 5.11
N/A	DC injection	UL1741 Sect. 45.5	IEEE1547.1 Sect. 5.6
☑	Grid Abnormal Conditions	UL1741 Sect. 46.2	IEEE1547.1 Sect. 5.2, 5.3
☑	Reconnection to Grid	UL1741 Sect. 46.2.3	IEEE1547.1 Sect. 5.10
☑	Anti-islanding Test	UL1741 Sect. 46.3 (J3.b)	IEEE1547.1 Sect. 5.7
☑	Loss of Control Circuit	UL1741 Sect. 46.4	UL1741 Sect. 46.4
☑	Short Circuit Test	UL1741 Sect. 47.3	UL1741 Sect. 47.3
N/A	Load Transfer Test	UL1741 Sect. 47.7	UL1741 Sect. 47.7
☑	Surge Withstand	Rule 21 J.3.e	IEEE1547.1 Sect. 5.5.2
☑	Synchronization	Rule 21 J.3.f	IEEE1547.1 Sect. 5.4
N/A	Non-export	Rule 21 J.3.c	Rule 21 J.3.c
N/A	In-rush Current	Rule 21 J.3.d	IEEE1547.1 Sect. 5.4.4
☑	Temperature Stability		IEEE1547.1 Sect. 5.1

Device Rating[5]: Input: 250–500V, 1200A,
Output: 380–480V, 570A / 375KVA, 50/60Hz (3Ø)

Maximum available fault current, 685 A_____

In-rush current[6], N/A _____

Trip settings (Magnitude/Timing)[7]: (See test report for details)

		Factory Voltage Setting	Factory timing Setting
Fast Over Voltage	Setting	332.4 V	30msec
	Measured	332.4 V	27msec
Over Voltage	Setting	304.7 V	530msec
	Measured	303.9 V	526msec
Under Voltage	Setting	243.8 V	530msec
	Measured	243.5 V	526msec
Fast Under Voltage	Setting	221.6 V	30msec
	Measured	222.1 V	26msec
Over Frequency	Setting	60.50 Hz	60msec
	Measured	60.49 Hz	58msec
Under Frequency	Setting	59.5 Hz	60msec
	Measured	59.49 Hz	57msec

Note: Trip settings are field adjustable. See test report for details and additional results.

Nominal Power Factor (Range, if adjustable) Adjustable 0.8 to 1.0 at full load_____

Non Islanding: Yes ___ No X Maximum trip time: _____

Non Export: Yes ___ No X Method:_____

Other[8]:_____

_____

Notes:

1 Accreditation must apply to test standards listed herein.

2 Note here the date of certification, applicable serial number (range or first in series), or other information that indicates to which units the certification applies.

3 List appropriate functions, capabilities, applications, limitations, etc. Use additional sheets as necessary.

4 List all test documents (i.e. UL 1741, IEEE C62.45) and specific procedures (i.e. UL 1741 Sec 39.1 – 39.5, etc.) used to evaluate device's suitability for utility interconnection

5 For devices that use grid power to motor to speed.

6 For devices that use grid power to motor to speed.

7 Enter trip magnitude, Voltage in volts or frequency in Hz, and trip timing, in cycles into each square (Magnitude/Timing). Devices with adjustable settings shall provide test results over the range of settings. For each test setting provide the setting values in the upper box and measured results in the lower box. List device ranges, if adjustable. Show data for one phase (greatest % difference between setting and measured magnitudes as well as the maximum trip time for that setting). Provide data for all phases (on additional sheets) if measured trip values for any two phases differ by more than 3% (for the same setting).

Notes:

[8] Provide any additional information that may be useful in evaluating these results such as test configurations, device settings used to meet requirements, etc. Use additional sheets if necessary.